

Claims

1. A method for identifying a candidate compound that disrupts Ecdysozoan molting, said method comprising:
    - (a) providing a cell expressing a *mlt* nucleic acid molecule or an ortholog of a *mlt* nucleic acid molecule;
    - (b) contacting said cell with a candidate compound; and
    - (c) comparing the expression of said nucleic acid molecule in said cell contacted with said candidate compound with the expression of said nucleic acid molecule in a control cell not contacted with said candidate compound,
  - 10 wherein an alteration in said expression identifies said candidate compound as a candidate compound that disrupts molting.
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2. The method of claim 1, wherein said cell expresses a *mlt* nucleic acid molecule selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6,

ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1,  
Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6, K04A8.6, ZC13.3,  
T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19,  
Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10, ZK945.2, ZK637.4,  
5 C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7,  
Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1, C26C6.3,  
C42D8.5, F53G12.3, Y41D4B.10, F10C1.5.

3. The method of claim 1, wherein said ortholog of a *mlt* nucleic  
10 acid is selected from the group consisting of M90806, NM\_134578,  
AY075331, BG310588, BE758466, BG227161, BM346811, BG226227,  
BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404,  
BE579677, BI500192, BI782938, BI073876, BF060055, AI723670, BI746256,  
BM882137, BM277122, BM880769, BI501765, BE581131, AI539970,  
15 BE580231, BE238916 AY060635, NM\_143476, AC008339, L02793,  
NM\_079167, J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449,  
NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_080132,  
NM\_132335, AJ487018, NM\_080072, AY094832, NM\_057520, NM\_136653,  
NM\_078644, AY075331, M90806, NM\_079419, NM\_080092, AAF51201,  
20 NM\_057698, NM\_134578, AY071265, AY060235, NM\_078577,  
NM\_057621, AY089504, NM\_135238, X78577, AY118647, NM\_140652,  
AY113364, NM\_079972, X58374, NM\_132550, AY052122 AY060893,  
AY058709, AA161577, CAAC01000016, BI744615, BG224680, AW114337,  
BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893,  
25 BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597,  
BI863834, AI987143, BI782814, BI744849, and BG735807.

4. A method for identifying a candidate compound that disrupts molting in a nematode, said method comprising:

- (a) providing a nematode cell expressing a *mlt* nucleic acid molecule;
- (b) contacting said nematode cell with a candidate compound; and
- 5 (c) comparing the expression of said nucleic acid molecule in said nematode cell contacted with said candidate compound with the expression of said nucleic acid molecule in a control cell not contacted with said candidate compound, wherein an alteration in said expression identifies said candidate compound as a candidate compound that disrupts molting in a nematode.

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5. The method of claim 4, wherein said *mlt* nucleic acid molecule is selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, 15 F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, 20 T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EED8.5, F10E9.7, 25 F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, 30 T17H7.3, H27M09.5, F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3,

F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21,  
Y71F9AL.7, Y51H1A.3, W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9,  
Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1,  
W09C5.6, T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10,  
5 F10C1.5, or an ortholog of said nucleic acid molecule.

6. The method of claim 5, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466,  
BG227161, BM346811, BG226227, BF169279, BE580288, BG893621,  
10 BQ625515, BI746672, AA471404, BE579677, BI500192, BI782938,  
BI073876, BF060055, AI723670, BI746256, BM882137, BM277122,  
BM880769, BI501765, BE581131, AI539970, BE580231, BE238916,  
AY060635, NM\_143476, AC008339, L02793, NM\_079167, J02727,  
NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419,  
15 NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018,  
NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644,  
AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698,  
NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504,  
NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972,  
20 X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577,  
CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500,  
BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088,  
BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814,  
BI744849, and BG735807.

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7. The method of claim 1 or 4, wherein said method identifies a compound that decreases transcription of said *mlt* nucleic acid molecule.

8. The method of claim 1 or 4, wherein said method identifies a compound that decreases translation of an mRNA transcribed from said *mlt* nucleic acid molecule.

5 9. The method of claim 1 or 4, wherein said compound is a member of a chemical library.

10 10. The method of claim 4, wherein said method is carried out in a nematode.

11. The method of claim 1, wherein said cell is a nematode cell.

12. A method for identifying a candidate compound that disrupts molting in an Ecdysozoan, said method comprising:

15 (a) providing a cell expressing a MLT polypeptide;  
(b) contacting said cell with a candidate compound; and  
(c) comparing the biological activity of said MLT polypeptide in said cell contacted with said candidate compound to a control cell not contacted with said candidate compound, wherein an alteration in said biological activity  
20 of said MLT polypeptide identifies said candidate compound as a candidate compound that disrupts molting in an Ecdysozoan.

13. The method of claim 12, wherein said cell is a nematode cell.

25 14. The method of claim 12, wherein said cell is a mammalian cell.

15. The method of claim 12, wherein said MLT polypeptide is a protease.

16. The method of claim 12, wherein said biological activity is monitored with an enzymatic assay.

17. The method of claim 12, wherein said biological activity is 5 monitored with an immunological assay.

18. The method of claim 12, wherein said cell is in a nematode and said biological activity is monitored by detecting molting.

10 19. The method of claim 12, wherein said MLT polypeptide is a polypeptide encoded by a nucleic acid molecule selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, 15 F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, 20 T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EEEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, 25 F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, 30 F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12,

T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3,  
W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22,  
Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1,  
Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an  
5 ortholog of said nucleic acid molecule.

20. The method of claim 19, wherein said ortholog is selected from  
the group consisting of M90806, NM\_134578, AY075331, BG310588,  
BE758466, BG227161, BM346811, BG226227, BF169279, BE580288,  
10 BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,  
BI782938, BI073876, BF060055, AI723670, BI746256, BM882137,  
BM277122, BM880769, BI501765, BE581131, AI539970, BE580231,  
BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167,  
J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419,  
15 NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018,  
NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644,  
AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698,  
NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504,  
NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972,  
20 X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577,  
CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500,  
BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088,  
BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814,  
BI744849, and BG735807.

21. A method for identifying a candidate compound that disrupts molting, said method comprising:

- (a) contacting a nematode with a candidate compound; and
- (b) comparing molting in said nematode contacted with said candidate compound to a control nematode not contacted with said candidate compound, wherein an alteration in said molting identifies said candidate compound as a candidate compound that disrupts molting in a nematode.

22. A method of identifying a candidate compound that disrupts Ecdysozoan molting, said method comprising:

- a) contacting a cell comprising a *mlt* nucleic acid regulatory region fused to a detectable reporter gene with an candidate compound;
- b) detecting the expression of the reporter gene; and
- c) comparing said reporter gene expression in said cell contacted with said candidate compound with a control cell not contacted with said candidate compound, wherein an alteration in the expression of the reporter gene identifies the candidate compound as a compound that disrupts molting in an Ecdysozoan.

23. The method of claim 22, wherein said alteration is an alteration of at least 10% in the timing of expression of said reporter gene relative to the timing of expression in a control nematode not contacted with said candidate compound.

24. The method of claim 22, wherein said alteration is an alteration of at least 10% in the level of expression of said reporter gene relative to the level of expression in a control nematode not contacted with said candidate compound.

25. The method of claim 22, wherein said alteration is an alteration in the cellular expression pattern of said reporter gene relative to the cellular expression pattern in a control nematode not contacted with said candidate compound.

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26. A method for identifying a candidate compound that disrupts Ecdysozoan molting, said method comprising:

- (a) contacting a MLT polypeptide with a candidate compound; and
- (b) detecting binding of said candidate compound to said MLT polypeptide, wherein said binding identifies said candidate compound as a candidate compound that disrupts molting in an Ecdysozoan.

10 27. The method of claim 26, wherein said compound is a member of a chemical library.

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28. An isolated RNA *mlt* nucleic acid inhibitor comprising at least a portion of a naturally occurring *mlt* nucleic acid molecule of an organism, or its complement, said *mlt* nucleic acid molecule being selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2,

D2085.1, EED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4,  
F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6,  
K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3,  
Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3,  
5 ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1,  
Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6,  
K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10,  
ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10,  
ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13,  
10 C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1,  
C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an ortholog of  
said *mlt* nucleic acid molecule, wherein said RNA *mlt* nucleic acid inhibitor is  
capable of hybridizing to a naturally occurring *mlt* nucleic acid molecule and  
decreasing expression of said *mlt* nucleic acid molecule in said organism.

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29. The RNA *mlt* nucleic acid inhibitor of claim 28, wherein said  
RNA is a double stranded RNA molecule that decreases expression in said  
organism by at least 10%.

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30. The RNA *mlt* nucleic acid inhibitor of claim 28, wherein said  
RNA molecule is an antisense nucleic acid molecule that is complementary to  
at least six nucleotides of said *mlt* nucleic acid molecule and decreases  
expression in said organism by at least 10%.

25

31. The RNA *mlt* nucleic acid inhibitor of claim 28, wherein said  
RNA molecule is an siRNA molecule that comprises at least 20 nucleic acids  
of said *mlt* nucleic acid molecule and decreases expression in said organism by  
at least 10%.

32. The RNA *mlt* nucleic acid inhibitor of claim 27, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, 5 BE579677, BI500192, BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167, J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_080132, 10 NM\_132335, AJ487018, NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644, AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504, NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972, X58374, NM\_132550, AY052122 AY060893, 15 AY058709 AA161577, CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814, BI744849, and BG735807.

20 33. A vector comprising the nucleic acid of claim 32 positioned for expression.

34. A host cell comprising the vector of claim 33.

25 35. The host cell of claim 34, wherein said host cell is a plant cell.

36. The host cell of claim 34, wherein said host cell is an animal cell.

37. A method for reducing a parasitic nematode infection in an organism, said method comprising contacting said organism with an RNA *mlt* nucleic acid inhibitor that comprises at least a portion of a *mlt* nucleic acid molecule, or its complement, selected from the group consisting of B0024.14,  
5 C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1,  
10 F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2,  
15 ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21,  
20 Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10,  
25 ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an ortholog of said nucleic acid molecule, in an amount sufficient to reduce said parasitic nematode infection in said organism.

38. The method of claim 37, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,
- 5 BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167, J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018,
- 10 NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644, AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504, NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972, X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577,
- 15 CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814, BI744849, and BG735807.

- 20 39. The method of claim 37, wherein said RNA *mlt* nucleic acid inhibitor is a double stranded RNA molecule that comprises at least 20 nucleic acids of a *mlt* nucleic acid molecule of claim 37 and is capable of hybridizing to a *mlt* nucleic acid molecule under high stringency conditions, and is capable of decreasing expression of the nucleic acid molecule in said organism with which it shares identity by at least 10%.
- 25

40. The method of claim 37, wherein said RNA *mlt* nucleic acid inhibitor is an antisense nucleic acid molecule that is complementary to at least six nucleotides of a *mlt* nucleic acid molecule of claim 37, and is capable of hybridizing to a *mlt* nucleic acid molecule under high stringency conditions and  
5 is capable of decreasing expression by at least 10% from the nucleic acid molecule to which it is complementary.

41. The method of claim 37, wherein said RNA *mlt* nucleic acid inhibitor is an siRNA molecule that comprises at least 20 nucleic acids of a *mlt* nucleic acid molecule of claim 37, and is capable of hybridizing to a *mlt* nucleic acid molecule under high stringency conditions and is capable of decreasing expression by at least 10% from the nucleic acid molecule with  
10 which it shares identity  
15

42. The method of claim 37, wherein said organism is a mammal.

43. The method of claim 37, wherein said mammal is a domestic mammal or human.

20 44. A pharmaceutical composition including a pharmaceutical excipient and a *mlt* nucleic acid molecule or portion thereof, selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2,  
25 F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1,  
30 T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1,

W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10,  
Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1,  
ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14,  
C37C3.2, C37C3.3, D2085.1, EEE8.5, F10E9.7, F19F10.9, F28F8.5,  
5 F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5,  
H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7,  
Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1,  
ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9,  
Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2,  
10 F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12,  
T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3,  
W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22,  
Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1,  
Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an  
15 ortholog of said nucleic acid molecule that reduces a parasite infection in an  
animal.

45. The composition of claim 44, wherein said ortholog is selected  
from the group consisting of M90806, NM\_134578, AY075331, BG310588,  
20 BE758466, BG227161, BM346811, BG226227, BF169279, BE580288,  
BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,  
BI782938, BI073876, BF060055, AI723670, BI746256, BM882137,  
BM277122, BM880769, BI501765, BE581131, AI539970, BE580231,  
BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167,  
25 J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419,  
NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018,  
NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644,  
AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698,  
NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504,  
30 NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972,

X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577,  
CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500,  
BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088,  
BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814,  
5 BI744849, and BG735807.

46. A pharmaceutical composition comprising a pharmaceutical excipient and an RNA *mlt* nucleic acid inhibitor comprising at least a portion of a *mlt* nucleic acid molecule of an organism, or its complement, selected from  
10 the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6,  
C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6,  
D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2,  
F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1,  
F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3,  
15 F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4,  
K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7,  
M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1,  
T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1,  
W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10,  
20 Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1,  
ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14,  
C37C3.2, C37C3.3, D2085.1, EEE8.5, F10E9.7, F19F10.9, F28F8.5,  
F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5,  
H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7,  
25 Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1,  
ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9,  
Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2,  
F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12,  
T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3,  
30 W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22,

Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1,  
Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an  
ortholog of said nucleic acid molecule that reduces a parasite infection in an  
animal.

5

47. The composition of claim 44, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192, 10 BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167, J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018, 15 NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644, AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504, NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972, X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577, 20 CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814, BI744849, and BG735807.

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48 A method of diagnosing an organism having a parasitic infection, said method comprising contacting a sample from said organism with a *mlt* nucleic acid probe and detecting an increased level of *mlt* nucleic acid in said sample relative to the level in a control sample not having a parasitic infection thereby diagnosing said organism as having a parasitic infection.

30

49. A method for diagnosing an organism having a parasitic infection, said method comprising detecting an increased level of MLT polypeptide present in a sample from said organism relative to the level in a control sample not having a parasitic infection thereby diagnosing said 5 organism as having a parasitic infection.

50. An insecticide including an insecticide excipient and an ortholog of a MLT polypeptide or portion thereof, selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, 10 C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, 15 K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, 20 ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, 25 ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10,

ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, that disrupts insect molting by at least 10%.

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51. The insecticide of claim 50, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192, 10 BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167, J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018, 15 NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644, AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504, NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972, X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577, 20 CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814, BI744849, and BG735807.

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52. An insecticide including an insecticide excipient and an ortholog of a *mlt* nucleic acid molecule or portion thereof, selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, 5 F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, 10 M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, 15 C37C3.3, D2085.1, EEE8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, 20 Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, 25 Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, that disrupts insect molting by at least 10%.

53. The composition of claim 52, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,  
5 BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167, J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018,  
10 NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644, AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698, NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504, NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972, X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577,  
15 CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814, BI744849, and BG735807.

20 54. An insecticide including an insecticide excipient and an RNA *mlt* nucleic acid inhibitor comprising at least a portion of an insect ortholog of a *mlt* nucleic acid molecule, or its complement, selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1,  
25 M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10,  
30 M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10,

- T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6,  
W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3,  
ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3,  
ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3,  
5 D2085.1, EEEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4,  
F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6,  
K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3,  
Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3,  
ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1,  
10 Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6,  
K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10,  
ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10,  
ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13,  
C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1,  
15 C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, that disrupts insect  
molting by at least 10%.

55. The composition of claim 52, wherein said ortholog is selected  
from the group consisting of M90806, NM\_134578, AY075331, BG310588,  
20 BE758466, BG227161, BM346811, BG226227, BF169279, BE580288,  
BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,  
BI782938, BI073876, BF060055, AI723670, BI746256, BM882137,  
BM277122, BM880769, BI501765, BE581131, AI539970, BE580231,  
BE238916, AY060635, NM\_143476, AC008339, L02793, NM\_079167,  
25 J02727, NM\_139674, NM\_079763, NM\_057268, NM\_137449, NM\_079419,  
NM\_080092, AAF51201, NM\_057698, NM\_080132, NM\_132335, AJ487018,  
NM\_080072, AY094832, NM\_057520, NM\_136653, NM\_078644,  
AY075331, M90806, NM\_079419, NM\_080092, AAF51201, NM\_057698,  
NM\_134578, AY071265, AY060235, NM\_078577, NM\_057621, AY089504,  
30 NM\_135238, X78577, AY118647, NM\_140652, AY113364, NM\_079972,

X58374, NM\_132550, AY052122 AY060893, AY058709, AA161577,  
CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500,  
BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088,  
BG735742, CAAC01000028, AA110597, BI863834, AI987143, BI782814,  
5 BI744849, and BG735807.

56. A nematicide including a nematicide excipient and a MLT  
polypeptide or portion thereof, selected from the group consisting of B0024.14,  
C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6,  
10 C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1,  
F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1,  
F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5,  
F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1,  
15 F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6,  
K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6,  
R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1,  
T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1,  
W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2,  
ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1,  
20 ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1,  
EEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1,  
F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1,  
R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21,  
Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5,  
25 ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1,  
Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6,  
K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10,  
ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10,

ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an ortholog of said polypeptide that disrupts nematode molting by at least 10%.

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57. The nematicide of claim 56, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192, 10 BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AA161577, CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597, 15 BI863834, AI987143, BI782814, BI744849, and BG735807.

58. A nematicide including a nematicide excipient and a *mlt* nucleic acid molecule or portion thereof, selected from the group consisting B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, 20 C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, 25 K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, 30 ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1,

- EEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1,  
F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1,  
R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21,  
Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5,  
5 ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1,  
Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6,  
K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10,  
ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10,  
ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13,  
10 C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1,  
C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an ortholog of  
said nucleic acid molecule that disrupts nematode molting by at least 10%.

59. The nematicide of claim 58, wherein said ortholog is selected  
15 from the group consisting of M90806, NM\_134578, AY075331, BG310588,  
BE758466, BG227161, BM346811, BG226227, BF169279, BE580288,  
BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,  
BI782938, BI073876, BF060055, AI723670, BI746256, BM882137,  
BM277122, BM880769, BI501765, BE581131, AI539970, BE580231,  
20 BE238916, AA161577, CAAC01000016, BI744615, BG224680, AW114337,  
BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893,  
BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597,  
BI863834, AI987143, BI782814, BI744849, and BG735807.

60. A nematicide including a nematicide excipient and an RNA *mlt* nucleic acid inhibitor comprising at least a portion of a *mlt* nucleic acid molecule, or its complement, selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6,  
5 C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6,  
10 K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1, T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1,  
15 ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EEED8.5, F10E9.7, F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5,  
20 ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5, F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13,  
25 C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and F10C1.5, or an ortholog of said nucleic acid molecule that disrupts nematode molting by at least 10%.

61. The nematicide of claim 60, wherein said ortholog is selected from the group consisting of M90806, NM\_134578, AY075331, BG310588, BE758466, BG227161, BM346811, BG226227, BF169279, BE580288, BG893621, BQ625515, BI746672, AA471404, BE579677, BI500192,
- 5 BI782938, BI073876, BF060055, AI723670, BI746256, BM882137, BM277122, BM880769, BI501765, BE581131, AI539970, BE580231, BE238916, AA161577, CAAC01000016, BI744615, BG224680, AW114337, BM281377, BU585500, BG577863, BQ091075, AW257707, BF014893, BQ613344, CAAC01000088, BG735742, CAAC01000028, AA110597,
- 10 BI863834, AI987143, BI782814, BI744849, and BG735807.

62. A transgenic organism comprising an RNA *mlt* nucleic acid inhibitor of claim 28, wherein said organism expresses said RNA *mlt* nucleic acid inhibitor at a level sufficient to disrupt molting in a nematode, a parasitic
- 15 nematode, or an insect that contacts said transgenic organism relative to a control nematode, parasitic nematode, or insect not contacted with said organism.

63. A transgenic organism comprising an RNA *mlt* nucleic acid inhibitor of claim 28, wherein said organism expresses the RNA *mlt* nucleic acid inhibitor at a level sufficient to disrupt molting in a nematode, a parasitic
- 20 nematode, or an insect breeding with said transgenic organism relative to a control nematode, parasitic nematode, or insect not bred with said organism.

- 25 64. A transgenic organism comprising a *mlt* nucleic acid molecule selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3, F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9,
- 30 F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1,

F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1,  
K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6,  
M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1,  
T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2,  
5 T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14,  
Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1,  
ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1,  
C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EED8.5, F10E9.7,  
F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3,  
10 F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1,  
Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y45F10B.5,  
Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1,  
R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5,  
F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3,  
15 F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7,  
Y51H1A.3, W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5,  
Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6,  
T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and  
F10C1.5, or an ortholog thereof, wherein a cell of said organism expresses said  
20 nucleic acid molecule at a level sufficient to disrupt molting in a nematode, a  
parasitic nematode, or an insect that contacts said organism relative to a control  
nematode, parasitic nematode, or insect not contacted with said organism.

65. A transgenic organism comprising a *mlt* nucleic acid molecule  
25 selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3,  
C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4,  
CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3,  
F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9,  
F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1,  
30 F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1,

K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6,  
M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1,  
T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2,  
T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14,  
5 Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1,  
ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1,  
C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EEE8.5, F10E9.7,  
F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3,  
F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1,  
10 Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y45F10B.5,  
Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1,  
R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5,  
F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3,  
F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7,  
15 Y51H1A.3, W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5,  
Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6,  
T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and  
20 F10C1.5, or an ortholog thereof, wherein a cell of said organism expresses said  
nucleic acid molecule at a level sufficient to disrupt molting in a nematode, a  
parasitic nematode, or an insect that breeds with said organism relative to a  
control nematode, parasitic nematode, or insect not contacted with said plant.

66. A transgenic plant comprising an RNA *mlt* nucleic acid inhibitor  
of claim 27, wherein a cell of said plant expresses said RNA *mlt* nucleic acid  
inhibitor at a level sufficient to disrupt molting in a nematode, a parasitic  
nematode, or an insect that contacts said plant relative to a control nematode,  
parasitic nematode, or insect not contacted with said plant.  
25

67. A transgenic plant comprising a *mlt* nucleic acid molecule selected from the group consisting of B0024.14, C01H6.5, C09G5.6, C11H1.3, C17G1.6, C23F12.1, B0272.5, C34G6.6, C37C3.3, C42D8.5, C45B2.7, CD4.4, CD4.6, D1054.15, F08C6.1, F09B12.1, F11C1.6, F16H9.2, F18A1.3,

5 F18C12.2, F20G4.1, F25B4.6, F29D11.1, F33A8.1, F33C8.3, F38H4.9, F40G9.1, F41C3.4, F41H10.7, F45G2.5, F49C12.12, F52B11.3, F53B8.1, F53G12.3, F54A5.1, F54C9.2, F56C11.1, F57B9.2, H04M03.4, H19M22.1, K04F10.4, K05C4.1, K06B4.5, K07C5.6, K07D8.1, K08B4.1, K09H9.6, M03F4.7, M03F8.3, M162.6, M6.1, M88.6, R05D11.3, R07E4.6, R11G11.1,

10 T01C3.1, T01H3.1, T05C12.10, T14F9.1, T19B10.2, T23F2.1, T24H7.2, T27F2.1, W01F3.3, W08F4.6, W09B6.1, W10G6.3, Y111B2A.14, Y37D8A.10, Y38F2AL.3, Y48B6A.3, ZC101.2, ZK1073.1, ZK1151.1, ZK262.8, ZK270.1, ZK430.8, ZK686.3, ZK783.1, ZK970.4, C09F12.1, C09H10.2, C17H12.14, C37C3.2, C37C3.3, D2085.1, EEE8.5, F10E9.7,

15 F19F10.9, F28F8.5, F32D1.2, F35H10.4, F41E7.1, F42A8.1, F54B3.3, F55A3.3, F56F3.5, H06I04.4a, K06A4.6, K10D6.1, R06A10.1, T07D10.1, Y17G7A.2, Y23H5A.7, Y38F2AL.3, Y41D4B.21, Y41D4B.5, Y45F10B.5, Y55H10A.1, ZK1236.3, ZK265.5, ZK265.6, ZK652.1, Y54E10BR.5, B0513.1, R06A4.9, Y105E8B.1, Y47D3B.1, Y54F10AL.2, T17H7.3, H27M09.5,

20 F45E10.2, F25H8.6, K04A8.6, ZC13.3, T19A5.3, F32D8.6, F53F4.3, F56C9.12, T25B9.10, ZK154.3, Y37D8A.19, Y37D8A.21, Y71F9AL.7, Y51H1A.3, W03F9.10, ZK945.2, ZK637.4, C30F8.2, F32H2.9, Y87G2A.5, Y53F4B.22, Y77E11A.13, C15H11.7, Y113G7B.23, C53H9.1, W09C5.6, T24B8.1, Y71A12B.1, C26C6.3, C42D8.5, F53G12.3, Y41D4B.10, and

25 F10C1.5, or an ortholog thereof, wherein a cell of said plant expresses said nucleic acid molecule at a level sufficient to disrupt molting in a nematode, a parasitic nematode, or an insect that contacts said plant relative to a control nematode, parasitic nematode, or insect not contacted with said plant.